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Transforming the Dermatologic Toolkit with Ultrasound: Multifunctional Applications from Cosmetic Imaging to HS Assessment

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Disclosures

- **Jane Yoo, MD, MPP** has nothing to disclose in relation to this activity
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Learning Objectives

- Assess the core principles, capabilities, and clinical applications of handheld ultrasound devices to enhance precision in cosmetic procedures and HS assessment
- Examine available and emerging treatment options for individuals with HS
- Interpret real-time ultrasound findings involving HS lesions and facial anatomy mapping
- Apply practical ultrasound techniques in the identification of key cosmetic and HS-related structures to inform appropriate treatment strategies or next steps

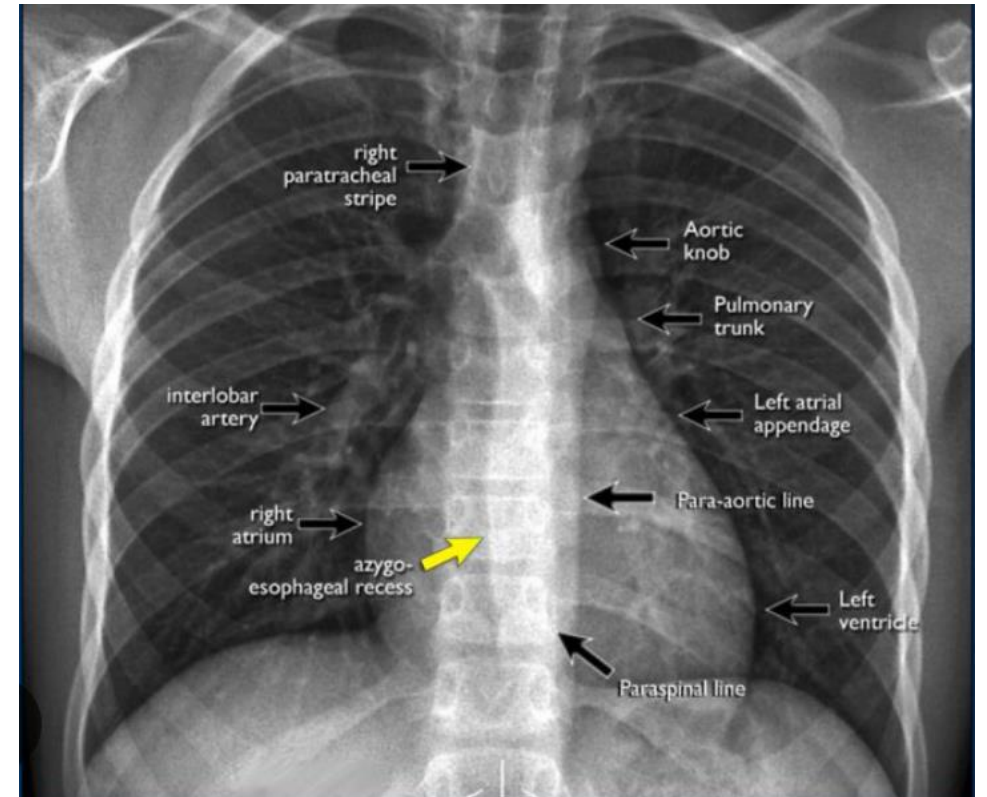
Dermatologic Ultrasound

Jane Yoo, MD, MPP

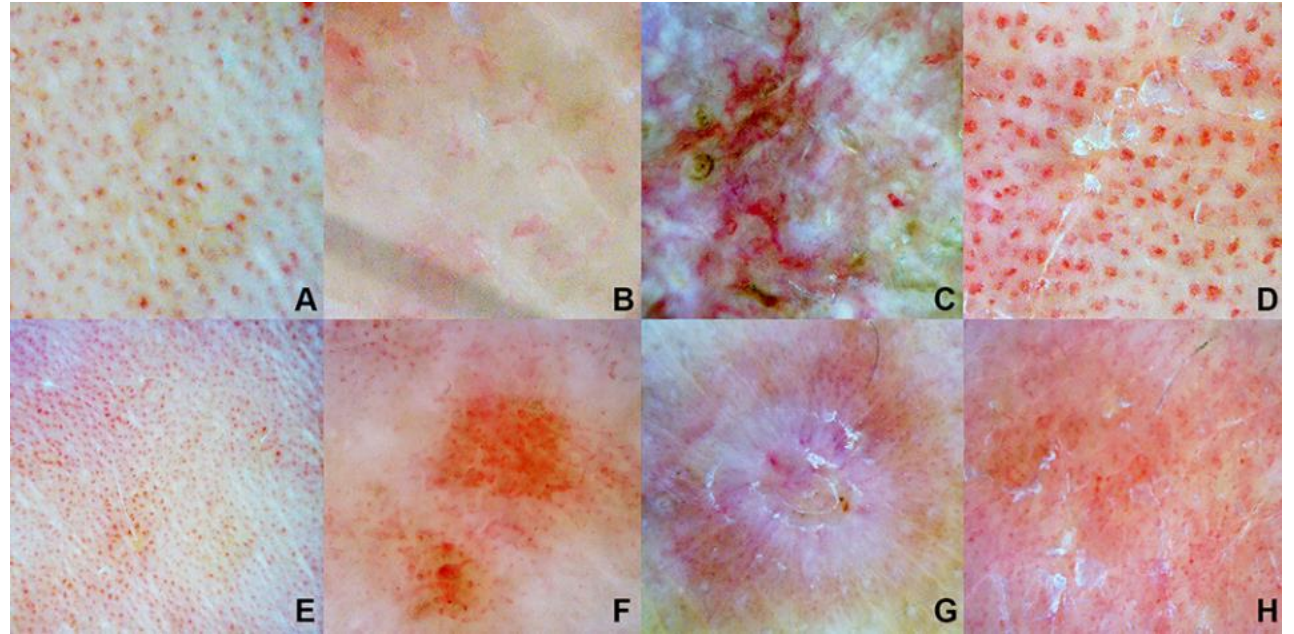
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Nothing Worthwhile Comes Easy...

Learning is a
never-ending
journey



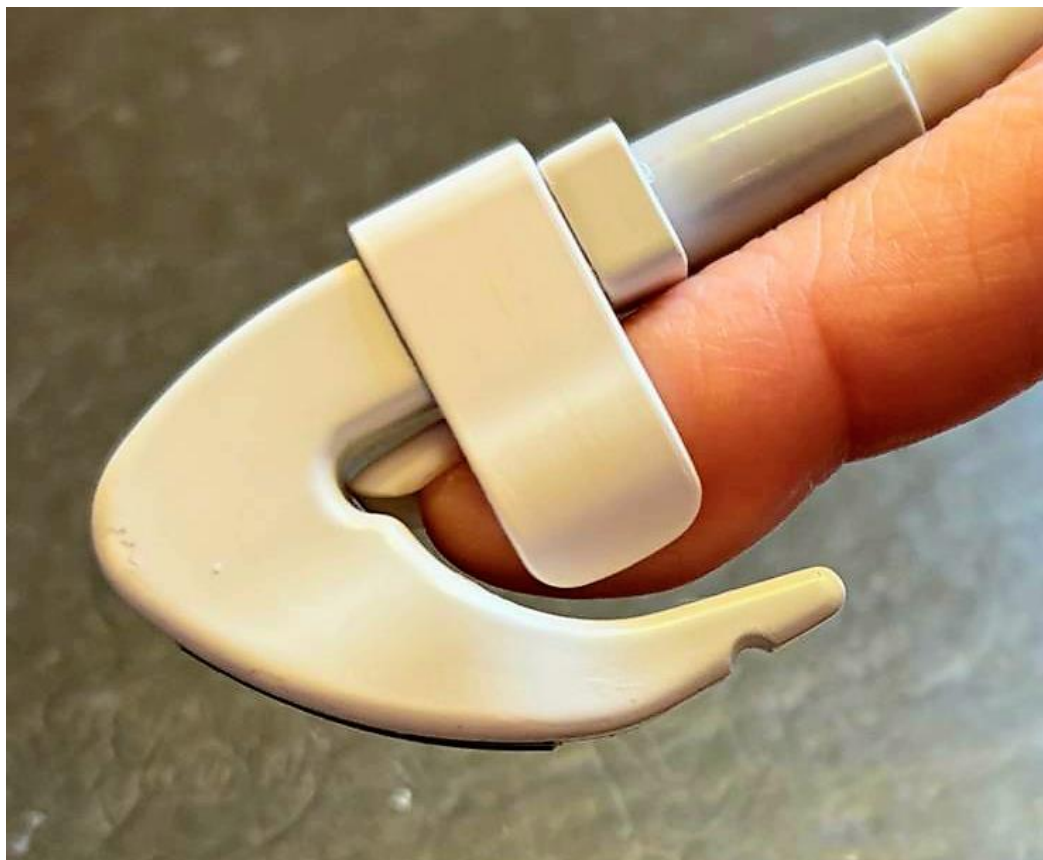
Third Eye



Fourth Eye



Fourth Eye



Basic Principles of Ultrasound

Emission of Sound Waves

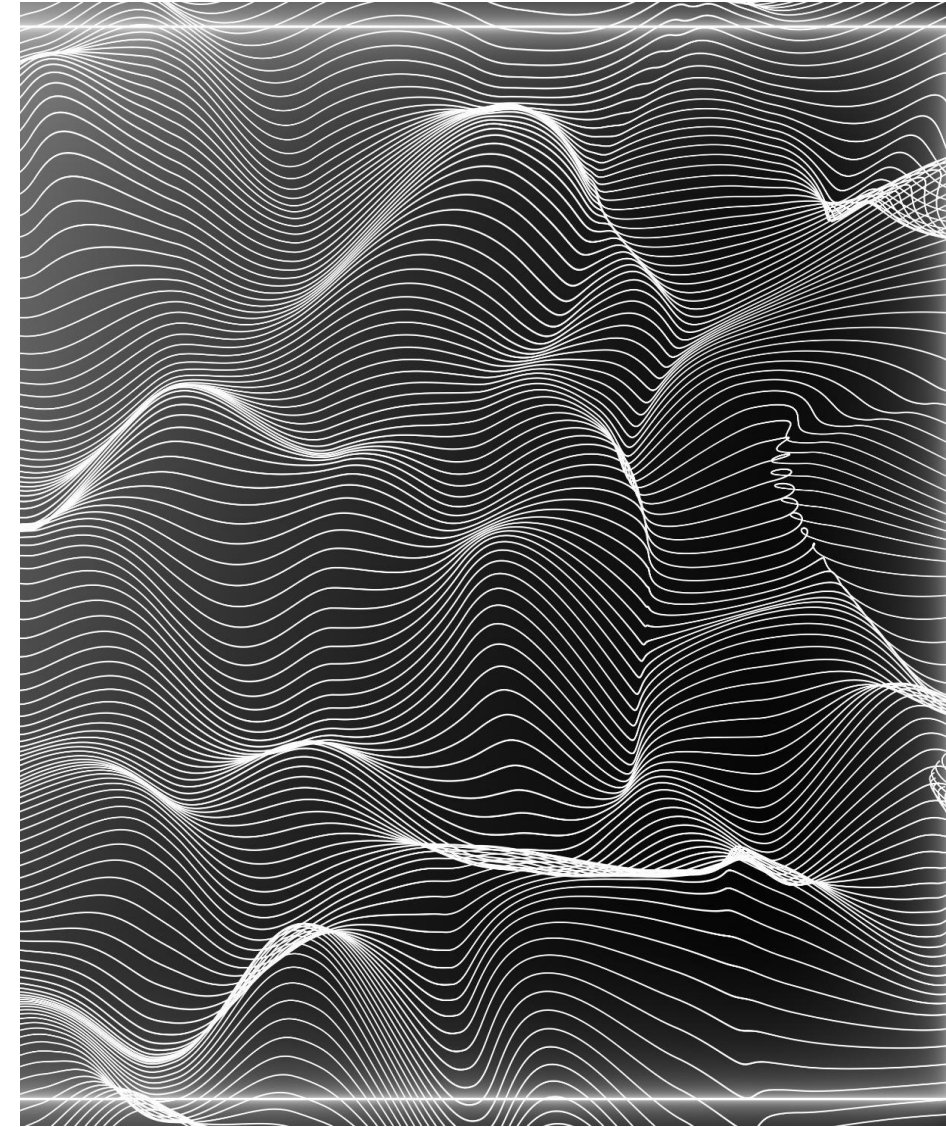
Ultrasound technology emits high-frequency acoustic waves that travel through the skin, allowing for imaging of internal structures.

Reflection of Sound Waves

These waves reflect off of what is encountered in the skin layers, thus creating echoes.

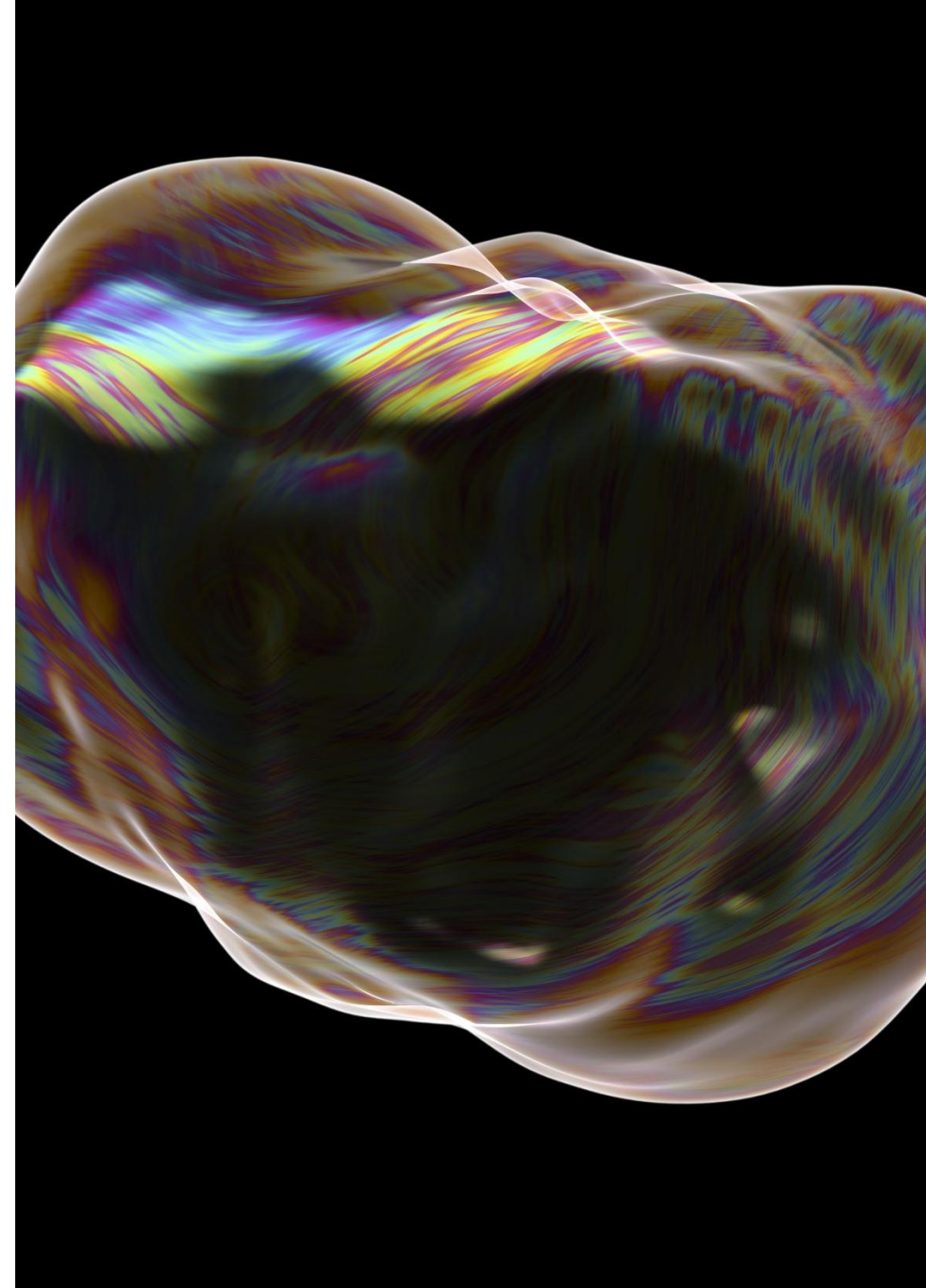
Image Creation

Echogenicity of structures determined by density as the acoustic wave passes through it, and this returns to the transducer to form a visual image.



Terminology and 50 Shades of Grey

- **Anechoic:** No internal echoes, appears black
- **Hypoechoic:** Darker than surrounding tissue
- **Hyperechoic:** Brighter than surrounding tissue
- **Posterior Acoustic Enhancement:** Increased brightness behind the structure due to sound waves passing through fluid (eg, cysts, HA filler)
- **Posterior Shadowing:** Dark area behind the structure due to sound wave absorption or reflection (eg, calcium, silicone)
- **Reverberation Artifacts:** Repeated bright lines behind the structure (eg, silicone)



Assessment of Skin Lesions and Tumors

Role of Ultrasound

Ultrasound plays a critical role in assessing skin lesions, providing detailed images to differentiate growths.

Benign vs Malignant

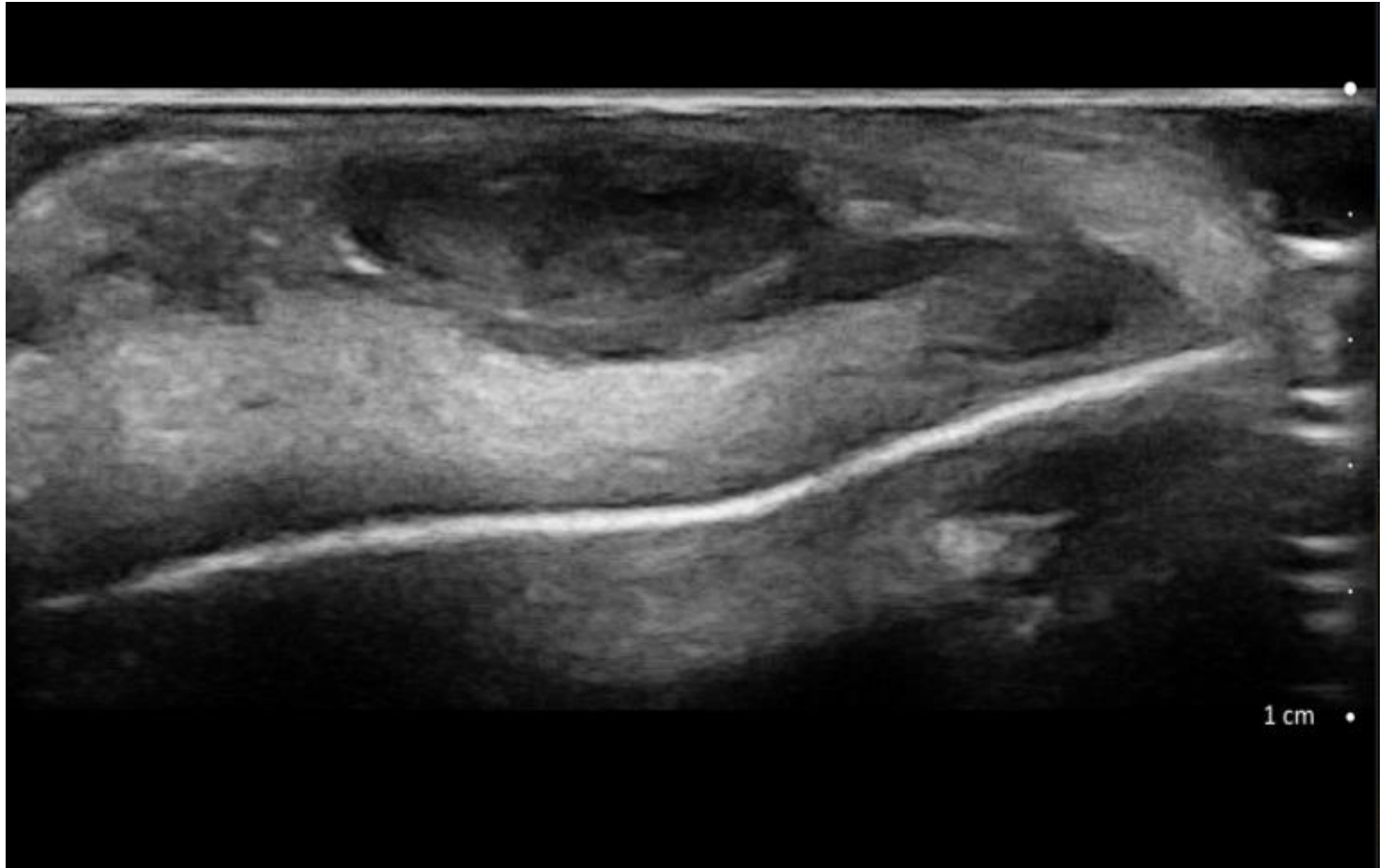
Differentiating between benign and malignant lesions is essential for appropriate treatment planning and patient management.

Treatment Planning

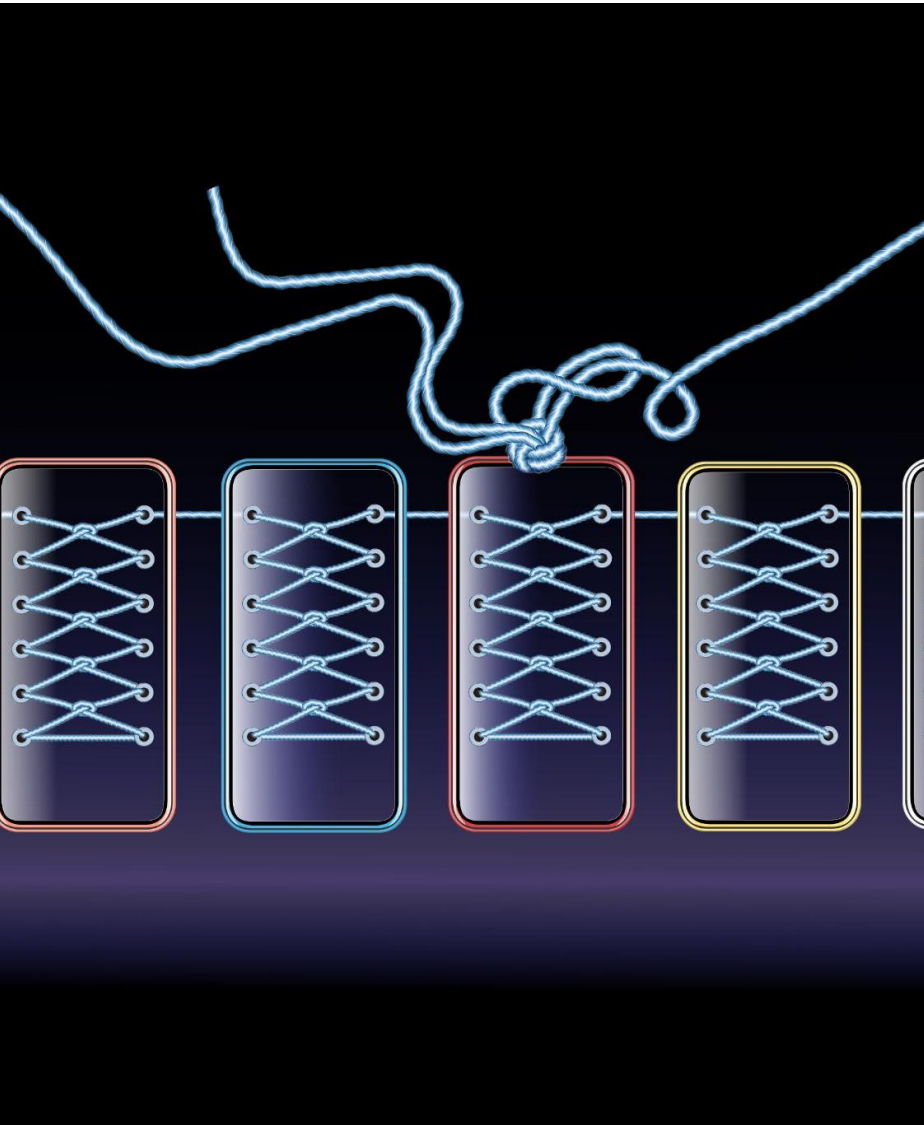
Accurate assessment through ultrasound is crucial for developing effective treatment plans for skin conditions.



Mucocele



Well-defined, fluid-filled, anechoic cystic structure with distinct borders



Monitoring of Inflammatory Skin Conditions

Use of Ultrasound

Ultrasound is an effective tool for monitoring inflammatory skin conditions, offering real-time images of affected areas.

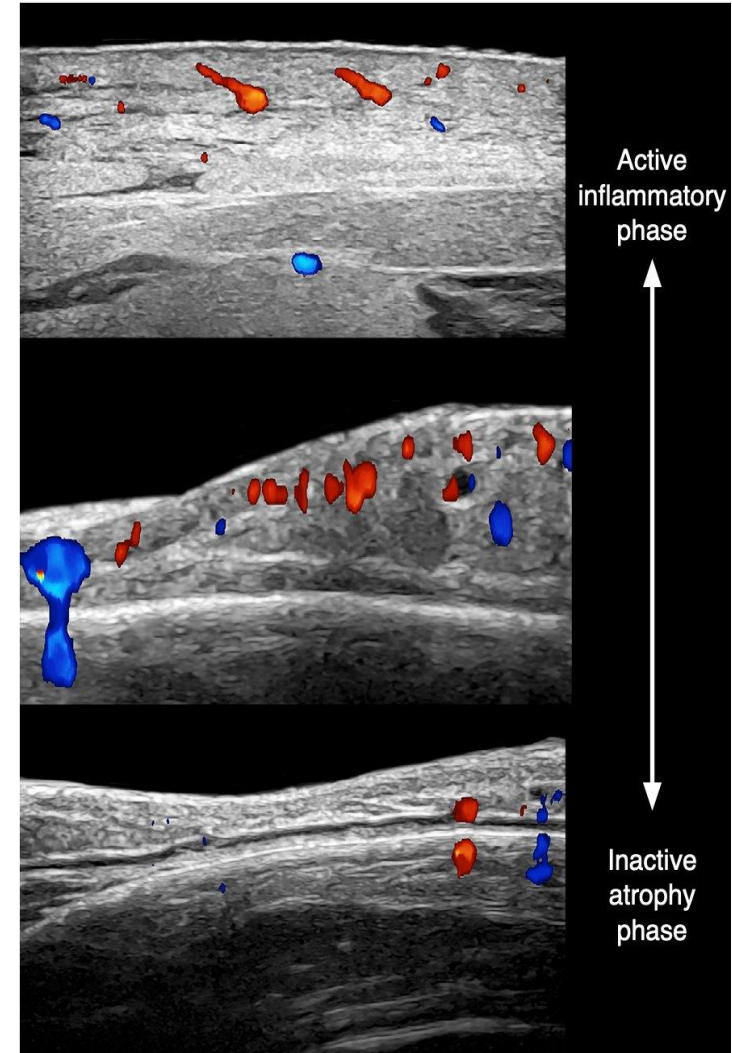
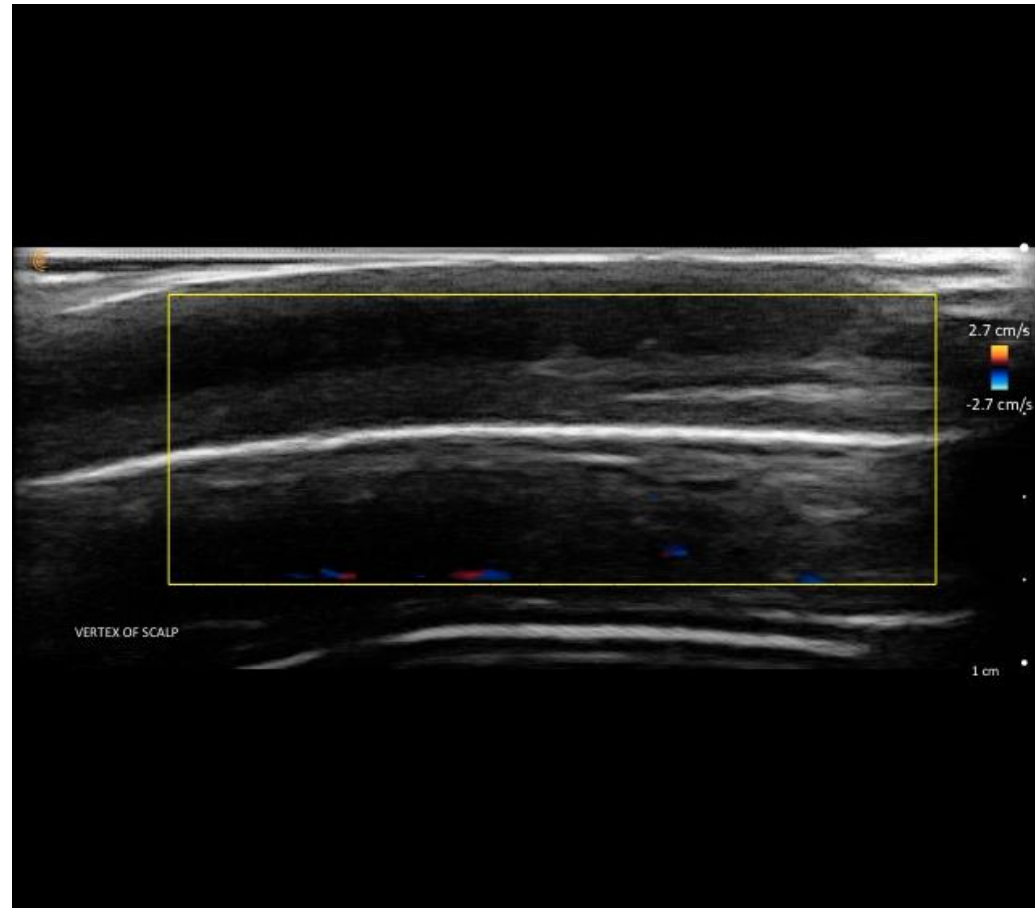
Disease Progression Monitoring

Regular ultrasound assessments help in tracking the progression of inflammatory skin diseases over time.

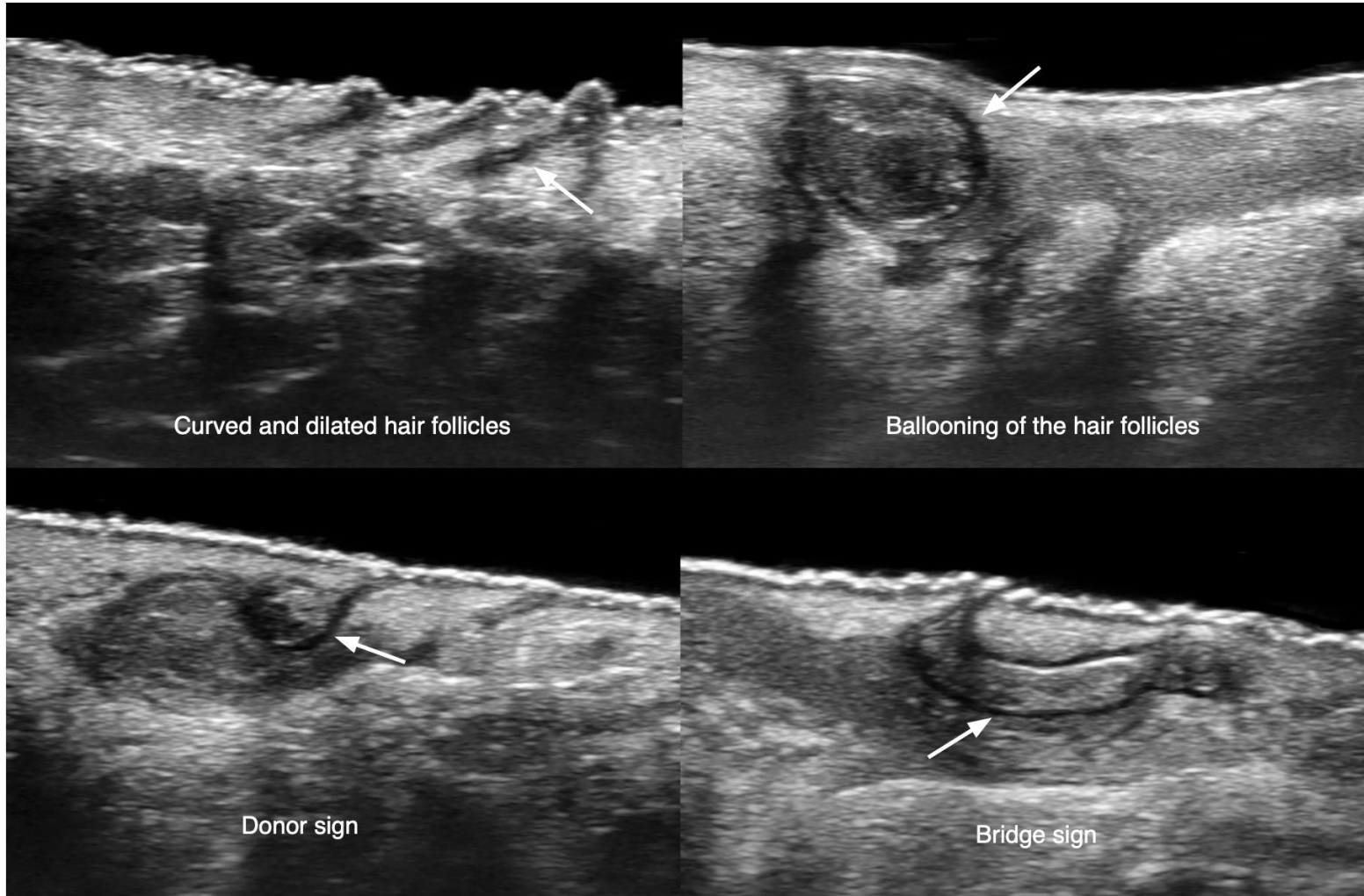
Treatment Response Evaluation

Ultrasound provides valuable feedback regarding the effectiveness of various therapeutic interventions for skin conditions.

Morphea



Hidradenitis Suppurativa



Donor: Ballooned hair follicles embedded in a fluid collection or fistulous tract

Bridge: A connecting hypoechoic band between two or more hair follicles

Table 2. Sonographic Criteria of Hidradenitis Suppurativa.

Criteria

- Widening of the hair follicles
- Thickening or abnormal echogenicity of the dermis
- Dermal pseudocystic nodules (round or oval-shaped hypoechoic or anechoic nodular structures)
- Fluid collections (anechoic or hypoechoic fluid deposits, in the dermis or hypodermis connected to the base of widened hair follicles)
- Fistulous tracts (anechoic or hypoechoic band-like structures across skin layers in the dermis or hypodermis connected to the base of widened hair follicles)

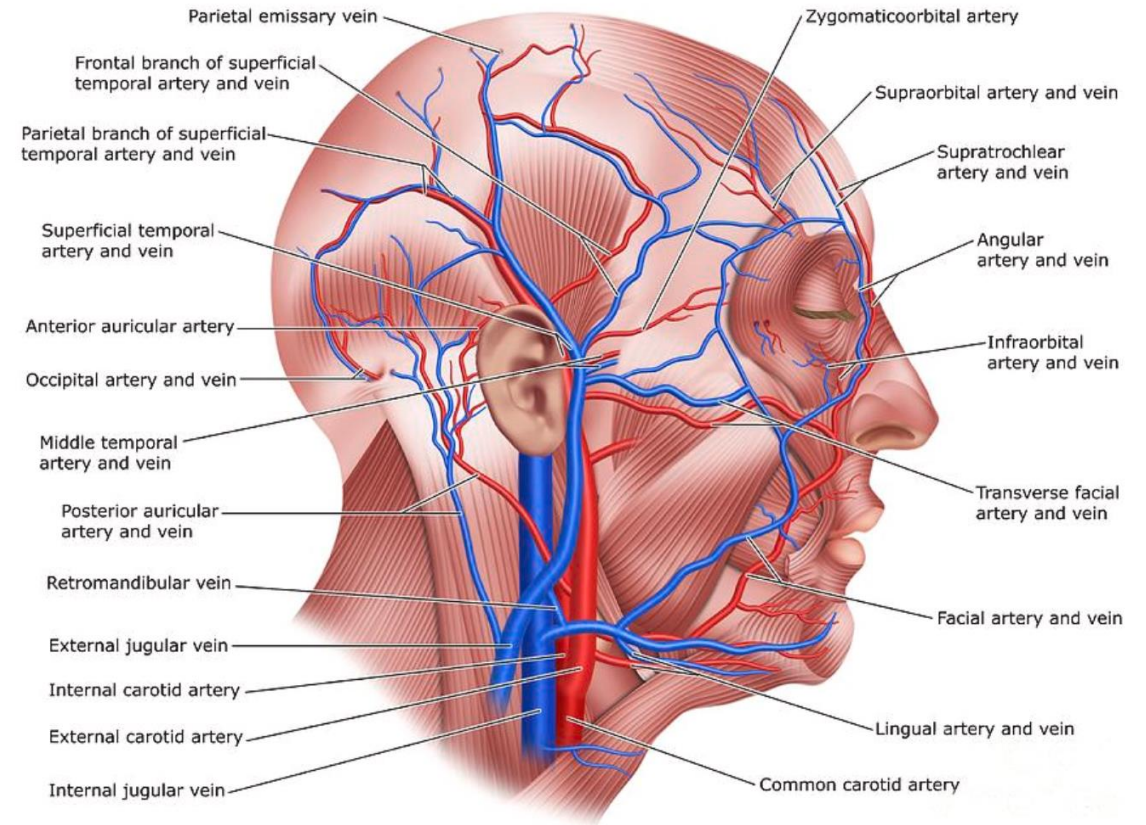
^aTo diagnose HS, you need three or more of the above signs.

Overview of Ultrasound Imaging Applications in Dermatology

Noof Almuhanha^{1,2,3}, Ximena Wortsman^{4,5,6},
Iris Wohlmuth-Wieser^{1,2,7}, Misaki Kinoshita-Ise⁸, and
Raed Alhusayen^{1,2}

Facial Danger Zones

- Glabella/brow
- Temple
- Nose/NLF
- Perioral
- Infraorbital




Practical Applications of Use for Aesthetics: **The New Gold Standard**

- Mapping out danger zones
- Correct placement of toxin/filler
- Dissolving previous filler/excess filler/nodules
- Impending vascular crisis: Hyaluronidase
- Troubleshooting complications

What Are You Looking at???

REVIEW ARTICLE

Nomenclature proposal for the sonographic description and reporting of soft tissue fillers

Leonie W. Schelke MD¹  | Daniel Cassuto MD² | Peter Velthuis MD, PhD¹ | Ximena Wortsman MD^{3,4,5}

Hyaluronic acid	Well-defined oval- or round-shaped anechoic homogeneous deposits without any signs of internal echoes.
Calcium hydroxyapatite	Well-defined band-like hyperechoic deposit with posterior acoustic shadowing artifact
Polycaprolactone	Ill-defined hypoechoic matrix that contain bright hyperechoic spots with a mini-comet tail artifact
Polyalkylimide	Hypoechoic mass, hyperechoic pseudocapsule, containing a spot of linear, sometimes an irregular pattern of hyperechoic material within the mass
Polyacrylamide	Well-defined, oval-shaped anechoic homogeneous deposits that produce posterior acoustic
Silicon oil	Ill-defined, hyperechoic mass-like deposits that produce diffuse posterior reverberation (“snow storm pattern”).
Polymethylmethacrylate	Ill-defined, hyperechoic mass-like deposits that produce mini-comet tail artifacts
Hydroxyethylmethacrylate	Ill-defined, hyperechoic mass-like deposits
Lipofilling	Hypoechoic, heterogeneous well-defined oval-shaped mass-like deposit (marker 2) with some hyperechoic linear septa

Early ultrasound for diagnosis and treatment of vascular adverse events with hyaluronic acid fillers

Leonie W. Schelke, MD,^a Peter Velthuis, MD, PhD,^b Jonathan Kadouch, MD,^b and Arthur Swift, MD^c

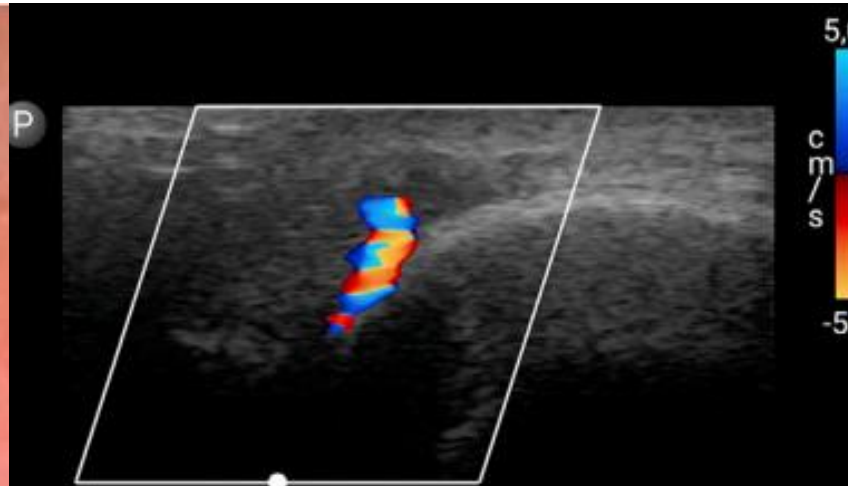





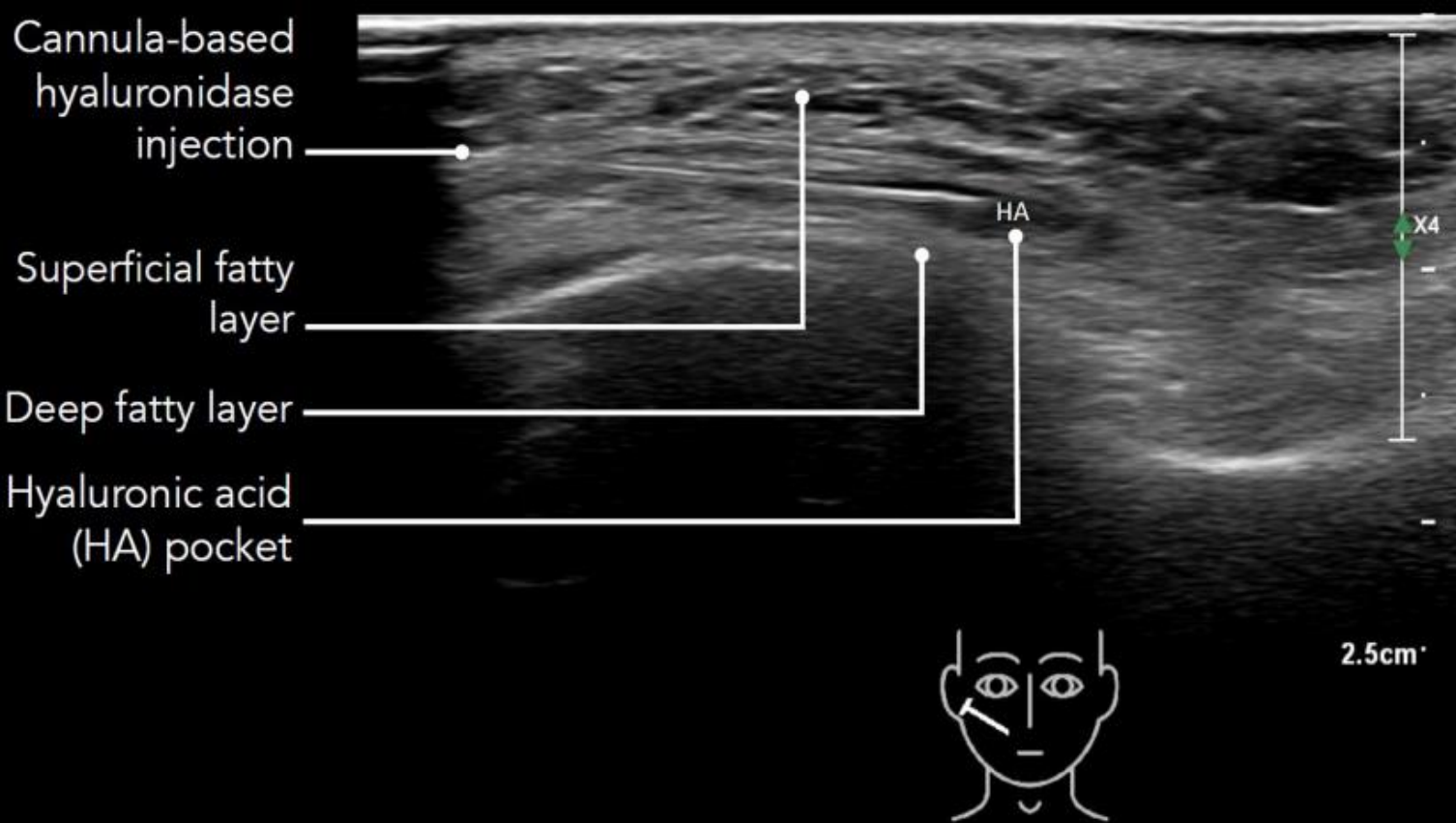
Fig 1. Hypervascular artery with hypochoic pocket of hyaluronic acid filler.

The observations with DUS examination support this intra-arterial choke hypothesis. The arteries before the obstruction are hypervascular, with an absence of flow in the ischemic area, and most important, there is an immediate recovery of arterial flow after ultrasonographically guided hyaluronidase injection into the HA filler deposit. In the cases we have described, only the filler deposit causing the intravascular event was dissolved, followed in each case by a clinical improvement of the livedo aspect.



Treating facial overfilled syndrome with impaired facial expression—Presenting clinical experience with ultrasound imaging

Leonie Schelke MD, PhD¹  | Steve Harris MD² | Hugues Cartier MD³ |
Michael Alfertshofer MD⁴  | Marwah Doestzada MD⁵ | Sebastian Cotofana PhD^{1,6}  |
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Thank You!

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A Brief Overview of Available and Emerging Treatment Options in HS

Alice Bendix Gottlieb, MD, PhD

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FDA-Approved Drugs

Adalimumab (TNF- α Inhibitor)

- **Adults**
 - 160 mg Day 1 (1 day or split over 2 consecutive days)
 - 80 mg Day 15
 - Then 40 mg every week OR 80 mg every other week starting Day 29
- **Adolescents ≥ 12 years**
 - 30 to <60 kg: 80 mg Day 1, then 40 mg every other week from Day 8
 - ≥ 60 kg: 160 mg Day 1, 80 mg Day 15, then 40 mg every week OR 80 mg every other week from Day 29

TNF = tumor necrosis factor.

Drugs@FDA: FDA-Approved Drugs. Accessed February 11, 2026.

https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/125057s424lbl.pdf.

Secukinumab (IL-17A Inhibitor)

- **Adults**
 - 300 mg at Weeks 0, 1, 2, 3, 4
 - Then 300 mg every 4 weeks
 - May increase to every 2 weeks if inadequate response

IL = interleukin.

Drugs@FDA: FDA-Approved Drugs. Accessed February 11, 2026.

https://www.accessdata.fda.gov/drugsatfda_docs/label/2025/125504Orig1s088,761349Orig1s008correctedlbl.pdf.

Bimekizumab (IL-17A/F Inhibitor)

- **Adults**
 - 320 mg at Weeks 0, 2, 4, 6, 8, 10, 12, 14, 16
 - Then 320 mg every 4 weeks

Infliximab

- Off-label for HS
- Optimal dose 10 mg/kg q 4 weeks IV
- Only IV drug
- Only truly weight-based dosing

Drugs in Development (Phases 2 and 3)

Drug	Mechanism	Phase	Primary Endpoint/ Outcome Measure (HiScr = HS Clinical Response)	Efficacy (Drug/PBO [%])	Selected Adverse Events
Sonelokimab	IL-17A, F nanobody	3	HiScr 75 at week 16	34/17.5 34/24.9	Oral candidiasis
Brivekimig	Dual-target, anti-TNF and anti-ox40 ligand nanobody	2	1°HiScr 50 at week 16 HiScr 75 at week 16	67/37 54/22	Candidiasis Increased ALT
Remibrutinib	BTK inhibitor	2	HiScr 50 at week 16	25 mg dose 75 100 mg dose 48.5 PBO 34.7	Increased LFTs, bruising, URIs

BTK = Bruton's tyrosine kinase; PBO = placebo; ALT = alanine transaminase; LFTs = liver function tests; URIs = upper respiratory infections. Porter ML, et al. Presented at: Symposium on Hidradenitis Suppurativa Advances (SHSA); October 31-November 2, 2025; Nashville, TN. Kimball AB, et al. Presented at: European Academy of Dermatology and Venereology (EADV) Congress; September 17-19, 2025; Paris, France. Kimball AB, et al. Presented at: American Academy of Dermatology (AAD) Annual Meeting; March 8-12, 2024; San Diego, CA. Andrus E. *Dermatology Times*. March 17, 2025. <https://www.dermatologytimes.com/view/povorcitinib-demonstrates-promising-phase-3-results-for-hidradenitis-suppurativa-treatment>. Ackerman LS, et al. *J Am Acad Dermatol*. 2025;92(6):1252-1260.

Drug	Mechanism	Phase	Primary Endpoint/ Outcome Measure (HiScr = HS Clinical Response)	Efficacy (Drug/PBO [%])	Selected Adverse Events
Povorcitinib (Phase 3 STOP-HS clinical trial program)	JAK inhibitor	3	HiScr 50 at week 12	45 mg dose 40.2 75 mg dose 40.6 PBO 29.7 2 nd pivotal trial results similar	JAK inhibitor; no new signals
Upadacitinib	JAK inhibitor	2	HiScr 50 at week 12	38/25 Historical PBO	JAK inhibitor; no new signals
Lutikizumab	Dual IL-1α/IL-1β mAb	2 single- arm	HiScr 50 at week 16	66	Neutropenia, elevated LFTs, perianal abscess

JAK = Janus kinase; mAb = monoclonal antibody.

Porter ML, et al. Presented at: Symposium on Hidradenitis Suppurativa Advances (SHSA); October 31-November 2, 2025; Nashville, TN. Kimball AB, et al. Presented at: European Academy of Dermatology and Venereology (EADV) Congress; September 17-19, 2025; Paris, France. Kimball AB, et al. Presented at: American Academy of Dermatology (AAD) Annual Meeting; March 8-12, 2024; San Diego, CA. Andrus E. *Dermatology Times*. March 17, 2025. <https://www.dermatologytimes.com/view/povorcitinib-demonstrates-promising-phase-3-results-for-hidradenitis-suppurativa-treatment>. Ackerman LS, et al. *J Am Acad Dermatol*. 2025;92(6):1252-1260.

Conventional Treatments (Many Not FDA-Approved)

- Topical and oral antibiotics
- Women: spironolactone
- Colchicine
- Dapsone
- Metformin
- Systemic, intralesional, and topical corticosteroids
- Surgery

Key Learning Points

We need to treat HS earlier to prevent scarring, chronic draining tunnels, disability, poor QOL

Ultrasound provides a means to detect tunnels and abscesses; early scarring not clinically evident



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